

2120 W. Virginia Ave

2120 West Virginia Ave NE, WASHINGTON, DC 20002

NEW PHOTOVOLTAIC CANOPY SYSTEM:

240.9 kW (DC)

200 kW (AC)



1. SITE NOTES
- 1.1 A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.

1.2 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE. SYSTEM IS UTILITY INTERACTIVE WITH NO STORAGE COMPONENTS.

1.3 THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.

1.4 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION (NEC 110.26)

1.5 ALTERNATE POWER SOURCE PLACARD SHALL BE PLASTIC, ENGRAVED IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTACHED USING AN APPROVED METHOD. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC.

1.6 THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #8 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER [NEC 250.64C.]

1.7 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.

1.8 RIGID CONDUIT MUST HAVE A PULL BUSHINGS TO PROTECT WIRES

1.9 BOLTED CONNECTION REQUIRED IN DISCONNECTS ON THE GROUNDED CONDUCTOR (USE POLARIS BLOCK OR NEUTRAL BAR)

1.10 ANY CONDUIT ENTRANCE ABOVE LIVE PARTS MUST BE WATERTIGHT. REDUCING WASHERS DISALLOWED ABOVE LIVE PARTS, MEYERS HUBS RECOMMENDED.

2. SOLAR CONTRACTOR
- 2.1. MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730.

2.2 IF APPLICABLE, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE MARKED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.

2.3 AS INDICATED BY DESIGN, OTHER NRTL LISTED MODULE GROUNDING DEVICES MAY BE USED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.

2.4 CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.

2.5 CONDUIT POINT OF PENETRATION FROM EXTERIOR TO INTERIOR TO BE INSTALLED AND SEALED WITH A SUITABLE SEALING COMPOUND.

2.6 DC WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS

2.7 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC UNLESS NOT AVAILABLE.

2.8 ALL PHOTOVOLTAIC MODULES, SOURCE CIRCUIT COMBINERS, INVERTERS, AC PANEL BOARDS, DISCONNECTS AND INTERCONNECTING MEANS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D).

2.9 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE.

3. EQUIPMENT LOCATIONS
- 3.1 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY [NEC 110.26].

3.2 EQUIPMENT INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY [NEC 690.31 (A)-(B)] AND [NEC TABLE 310.15 (B)(2)(C)].

3.3. ADDITIONAL AC DISCONNECTS SHALL BE PROVIDED WHERE THE INVERTER IS NOT ADJACENT TO THE UTILITY AC DISCONNECT, OR NOT WITHIN SIGHT OF THE UTILITY AC DISCONNECT.

3.4 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.

3.5 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USE WHEN APPROPRIATE.

4. WIRING & CONDUIT NOTES
- 4.1 ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR ITS SITE APPLICATION

4.2 ALL PV CABLES AND HOMERUN WIRES BE PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED

4.3 ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [NEC 690.8 (A)(1) & (B)(1)], [NEC 240] [NEC 690.7] FOR MULTIPLE CONDUCTORS.

4.4 ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [NEC TABLE 310.15 (B)(2)(C)] BLACK ONLY**

4.5 EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES

4.6 PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/ THWN-2 INSULATED, RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V PER NEC 2011

4.7 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS.

4.8 ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION

4.9 VOLTAGE DROP LIMITED TO 2% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS

4.10 NEGATIVELY GROUNDED SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: DC POSITIVE - RED (OR MARKED RED), DC NEGATIVE - GREY (OR MARKED GREY)

4.11 POSITIVELY GROUNDED SYSTEMS DC CONDUCTORS COLOR CODED: DC POSITIVE - GREY (OR MARKED GREY), DC NEGATIVE - BLACK (OR MARKED BLACK)

4.12 AC CONDUCTORS > 4 AWG COLOR CODED OR MARKED: PHASE A OR L1- BLACK, PHASE B OR L2- RED, PHASE C OR L3- BLUE, NEUTRAL- WHITE/GRAY

5. STRUCTURAL NOTES
- 5.1 RACKING SYSTEM & PV ARRAY SHALL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL.

5.2 ROOF MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.

5.3 ARRAY SHALL BE A MIN. HEIGHT OF 3" ABOVE THE ROOF DECK.

5.4 JUNCTION BOX SHALL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.

5.5 ROOFTOP PENETRATIONS PERTAINING TO SOLAR RACKING WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.

5.6 ALL PV RELATED RACKING ATTACHMENTS WILL BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER. O.C. FINAL ATTACHMENT LOCATIONS MAY BE ADJUSTED IN THE FIELD AS NECESSARY.

5.7 ALL PV RELATED RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW AMONGST THE ROOF FRAMING MEMBERS.

5.8 STRUCTURAL PLANS CERTIFIED AS PROVIDED IN SECTION 106.1.4.1 OF THE DC CONSTRUCTION CODE

6. GROUNDING NOTES
- 6.1 A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH [NEC 690-47] AND [NEC 250-60] THROUGH [NEC 60 250-166] SHALL BE PROVIDED. PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP

6.2 GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.

6.3 PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE TO [NEC 250.21], [NEC TABLE 250.122], AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO [NEC 690.43].

6.4 MODULE SOURCE CIRCUITS SHALL BE GROUNDED IN ACCORDANCE TO [NEC 690.42].

6.5 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER MODULE.

6.6 EACH MODULE WILL BE GROUNDED USING THE SUPPLIED CONNECTIONS POINTS IDENTIFIED IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

6.7 ENCLOSURES SHALL BE PROPERLY PREPARED WITH REMOVAL OF PAINT/FINISH AS APPROPRIATE WHEN GROUNDING EQUIPMENT WITH TERMINATION GROUNDING LUGS

6.8 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR DIRECT BURIAL.

6.9 GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER, SOLID OR STRANDED, AND BARE WHEN EXPOSED.

6.10 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZE ACCORDING TO [NEC 690.45] AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE (#6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE).

6.11 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN (OR MARKED GREEN IF #4 AWG OR LARGER)

6.12 ALL CONDUIT BETWEEN THE UTILITY AC DISCONNECT AND THE POINT OF CONNECTION SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS.

6.13 AC SYSTEM GEC SIZED ACCORDING TO [NEC690.47], [NEC TABLE 250.66], DC SYSTEM GEC SIZED ACCORDING TO [NEC 250.166], MINIMUM #8AWG WHEN INSULATED, #6AWG WHEN EXPOSED.

6.14 EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENTS, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE.

7. INTERCONNECTION NOTES
- 7.1 PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN SERVICE BREAKER OR TRANSFORMER INPUT FEEDER IN ACCORDANCE WITH [NEC 690.64(B)(7)]

7.2 SUM OF BREAKER RATINGS SUPPLYING THE BUS MAY NOT EXCEED 120% OF THE THE BUSBAR RATING PER [NEC 690.64(B)(2)] AND/OR [NEC 705.12(D)(1).

7.3 GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9] & [NEC 230.95] ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.

7.4 SUPPLY SIDE INTERCONNECTION ACCORDING TO [NEC 690.64(A)] AND/OR [NEC 705.12(A)] WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH [NEC 230.42(B)]

7.5 AC INTERCONNECTION SHALL FEATURE AN OVER CURRENT PROTECTION DEVICE IN ACCORDANCE WITH [NEC 110.3(B)].

8. DISCONNECT NOTES
- 8.1 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS

8.2 AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH

8.3 DC CURRENT CONDUCTORS ARE TO REMAIN OUTSIDE OF BUILDING PRIOR TO EITHER A FUSEABLE SOURCE CIRCUIT COMBINER BOX OR A LOAD-BREAK DISCONNECTING DEVICE.

SYSTEM SIZE:

STC: 660 x 365 = 197.2kW

(660) SERAPHIM 365 W MODULES

--- NOT APPROVED FOR CONSTRUCTION ---

STAMP

PROJECT INFORMATION

OWNER
NAME: CREF COMMUNITY SOLAR

PROJECT MANAGER
NAME: PORTER RYAN
PHONE: (202) 716-8705

CONTRACTOR
NAME: NEW COLUMBIA SOLAR
PHONE: (202) 810-1661

AUTHORITIES HAVING JURISDICTION

BUILDING: DISTRICT OF COLUMBIA

ZONING: DISTRICT OF COLUMBIA

UTILITY: POTOMAC ELECTRIC POWER CO

DESIGN SPECIFICATION

OCCUPANCY: II

CONSTRUCTION: STEEL FRAME

ZONING:

GRD SNOW LOAD: 30 PSF

WIND EXPOSURE: C

WIND SPEED: 115 MPH

APPLICABLE CODES & STANDARDS

BUILDING: IBC 2012, IRC 2012

ELECTRICAL: NEC 2014

FIRE: IFC 2012

9. ADDITIONAL PROJECT NOTES:

- 9.1 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, MANUFACTURER'S LISTINGS AND INSTRUCTIONS, AND RELEVANT CODES AS SPECIFIED BY AUTHORITY HAVING JURISDICTION (AHJ).
- 9.2 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE INTEGRATES WITH INVERTER IN ACCORDANCE WITH NEC 690.5.
- 9.3 UTILITY INTERCONNECTION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
- 9.4 LOAD SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 690.64.
- 9.5 ALL PV SYSTEM COMPONENTS; MODULES, INVERTERS, AND COMBINERS IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEM AS REQUIRED BY NEC 690.4 AND NEC 690.6. PV MODULES: UL 1703 CERTIFIED, NFPA 70 CLASS C FIRE INVERTER(S); UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(S); UL 1703 OR UL 1741 ACCESSORY.

10. SCOPE OF WORK:

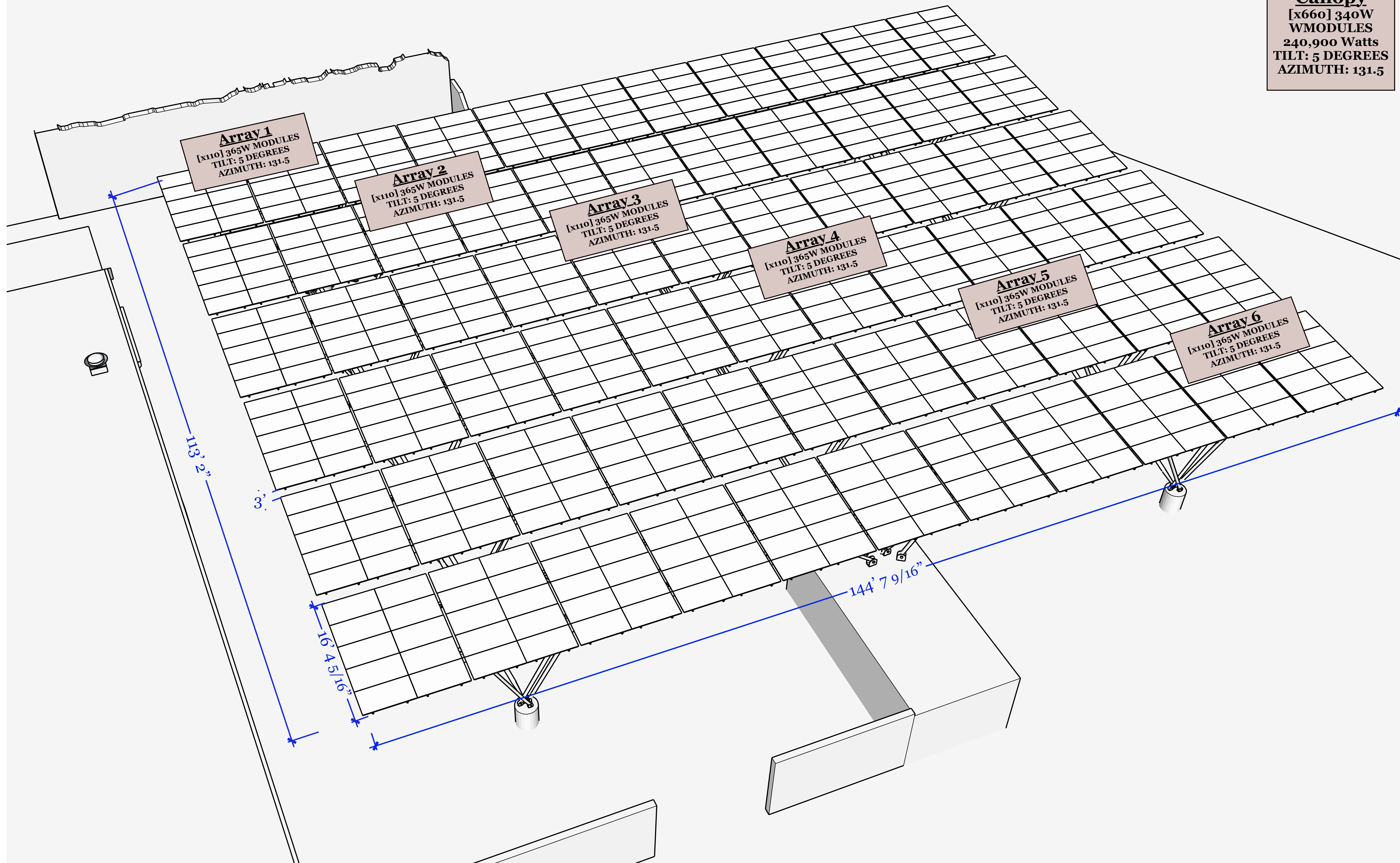
- 10.1 CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. CONTRACTOR WILL BE RESPONSIBLE FOR EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY AND INSTALL ROOF-MOUNTED (PV) SYSTEM.

11. WORK INCLUDES:


- 11.1 QUEST RENEWABLE CANOPY STEEL INSTALLATION
- 11.2 PV MODULE AND INVERTER INSTALLATION
- 11.3 PV SYSTEM GROUNDING
- 11.4 PV SYSTEM WIRING TO INVERTERS
- 11.5 PV SYSTEM MONITORING
- 11.6 PV DISCONNECT
- 11.7 PV GROUNDING ELECTRODE & BONDING TO GEC
- 11.8 PV FINAL COMMISSIONING
- 11.9 ELECTRICAL EQUIPMENT FOR PV

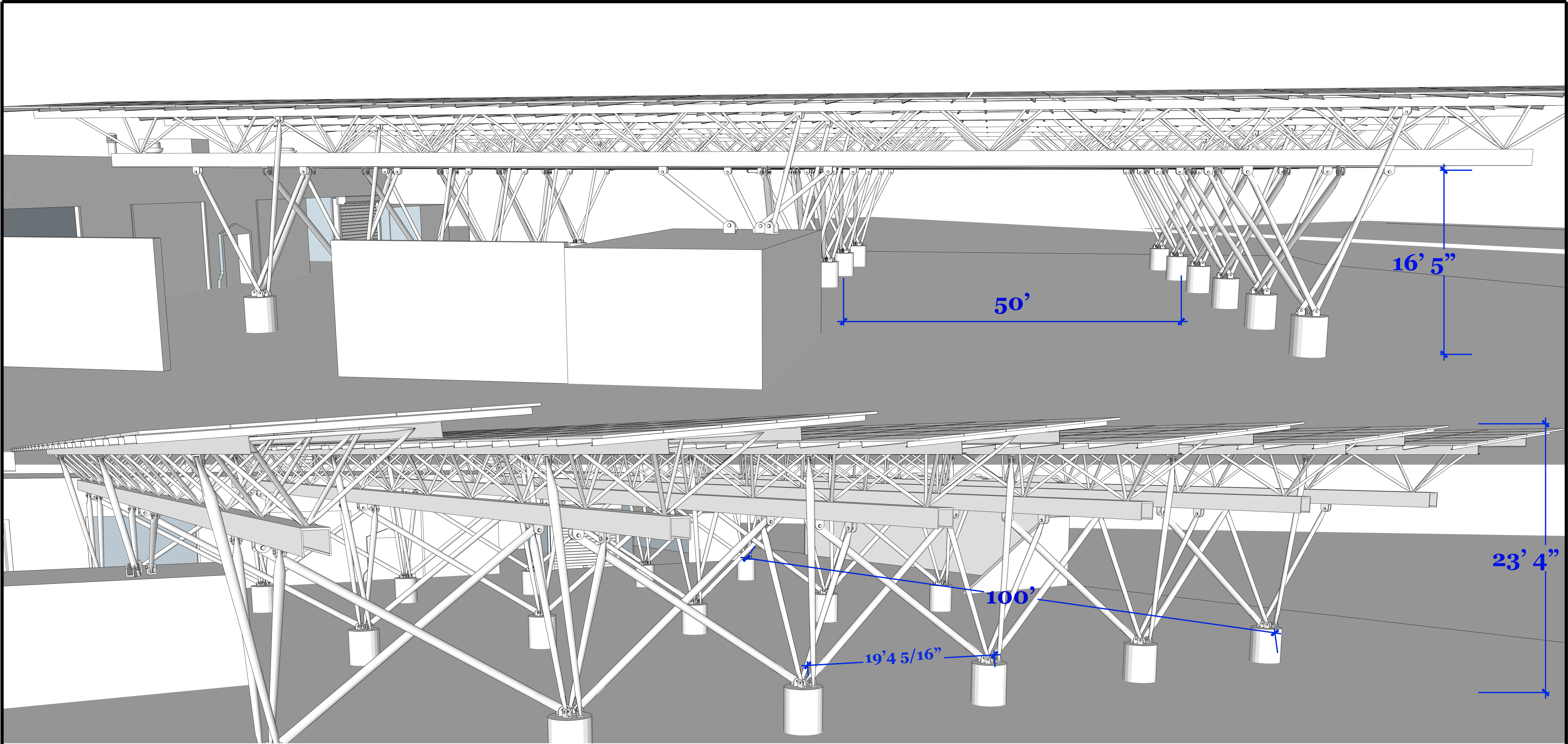
REVISIONS					PROJECT NAME AND ADDRESS			DRAWN BY:		SHEET SCHEDULE		DRAWING NAME		SHEET #	
SL. NO	REV	DESCRIPTION	DATE	BY	BOB SIEGEL SOLAR CANOPIES			CHECKED BY:	P. RYAN	SHEET # T-01 A-01 A-02 A-03 E-601 R-01 R-02 R-03	DRAWING NAME COVER PAGE CANOPY LAYOUT CANOPY ELEVATION DRAWINGS 1 CANOPY ELEVATION DRAWINGS 2 SINGLE LINE DIAGRAM RESOURCE DOCUMENTS 1 RESOURCE DOCUMENTS 2 RESOURCE DOCUMENTS 3 (PLAT)	COVER PAGE		T-01	
	0.1	50%	1/16/2019	PLM	401 New York Ave NE, Second Floor Washington, DC 20002			APPROVED:							
					T: (202) 810-1661			SCALE:							

Canopy
[x660] 340W
WMODULES
240,900 Watts
TILT: 5 DEGREES
AZIMUTH: 131.5



--- NOT APPROVED FOR CONSTRUCTION ---

REVISIONS						401 New York Ave NE, Second Floor Washington, DC 20002 T: (202) 810-1661	PROJECT NAME AND ADDRESS		DRAWN BY: P. MAYLONE		SHEET SCHEDULE		DRAWING NAME		SHEET #	
SL. NO	REV	DESCRIPTION	DATE	BY			BOB SIEGEL SOLAR CANOPIES		CHECKED BY: P. RYAN		SHEET #		CANOPY LAYOUT		A-01	
	0.1	30%	3/01/2019	PLM			2120 W. Virginia Ave NE		APPROVED:		T-01					
							Washington DC 20002		SCALE:		A-01					
							APN:				A-02					
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REVISIONS				
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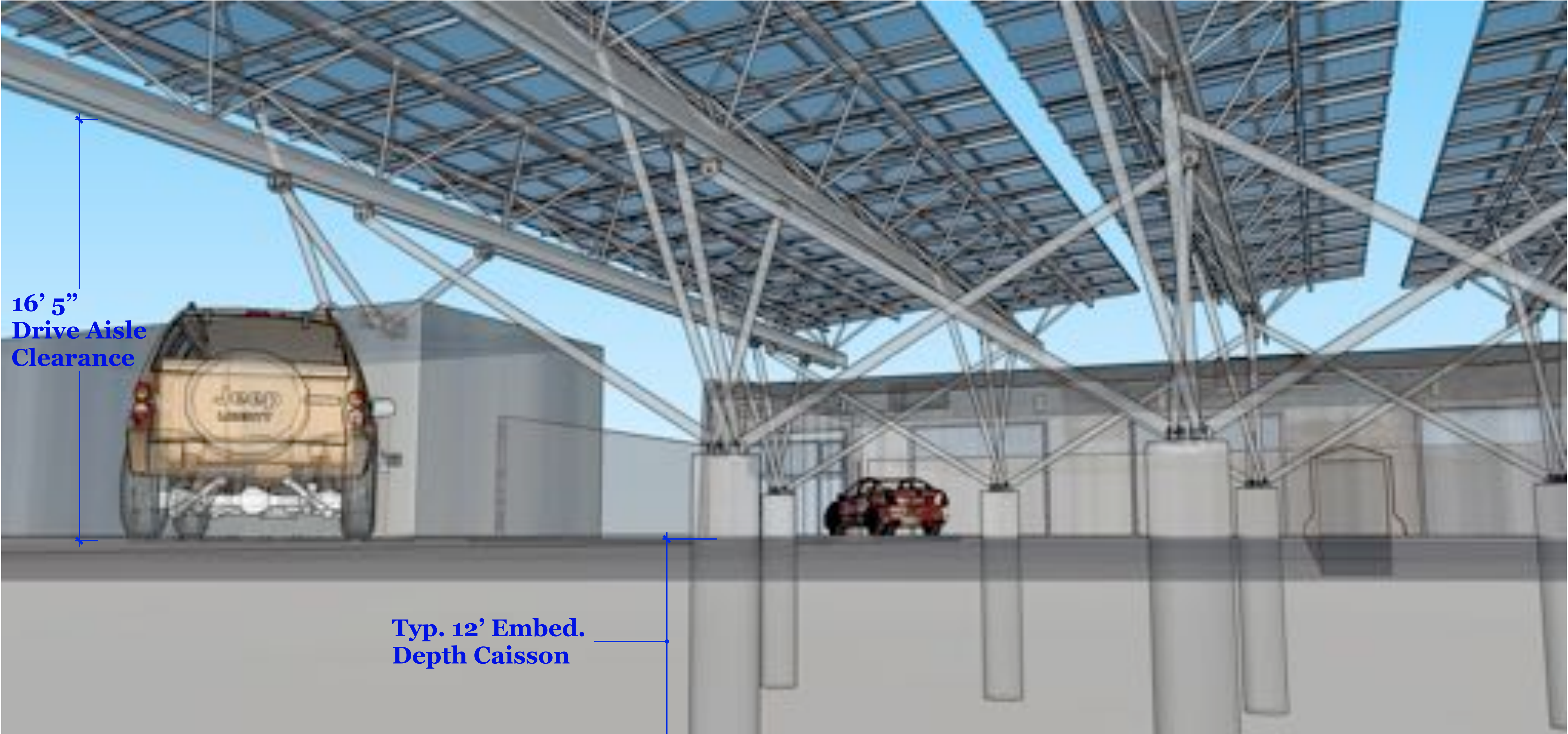
APN:

DRAWN BY:	P. MAYLONE
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APPROVED:	
SCALE:	

SHEET SCHEDULE	
SHEET #	DRAWING NAME
T-01	COVER PAGE
A-01	CANOPY LAYOUT
A-02	CANOPY ELEVATION DRAWINGS 1
A-03	CANOPY ELEVATION DRAWINGS 2
E-601	SINGLE LINE DIAGRAM
R-01	RESOURCE DOCUMENTS 1
R-02	RESOURCE DOCUMENTS 2
R-03	RESOURCE DOCUMENTS 3 (PLAT)

DRAWING NAME
**CANOPY
ELEVATION
DRAWINGS**

SHEET #
A-02



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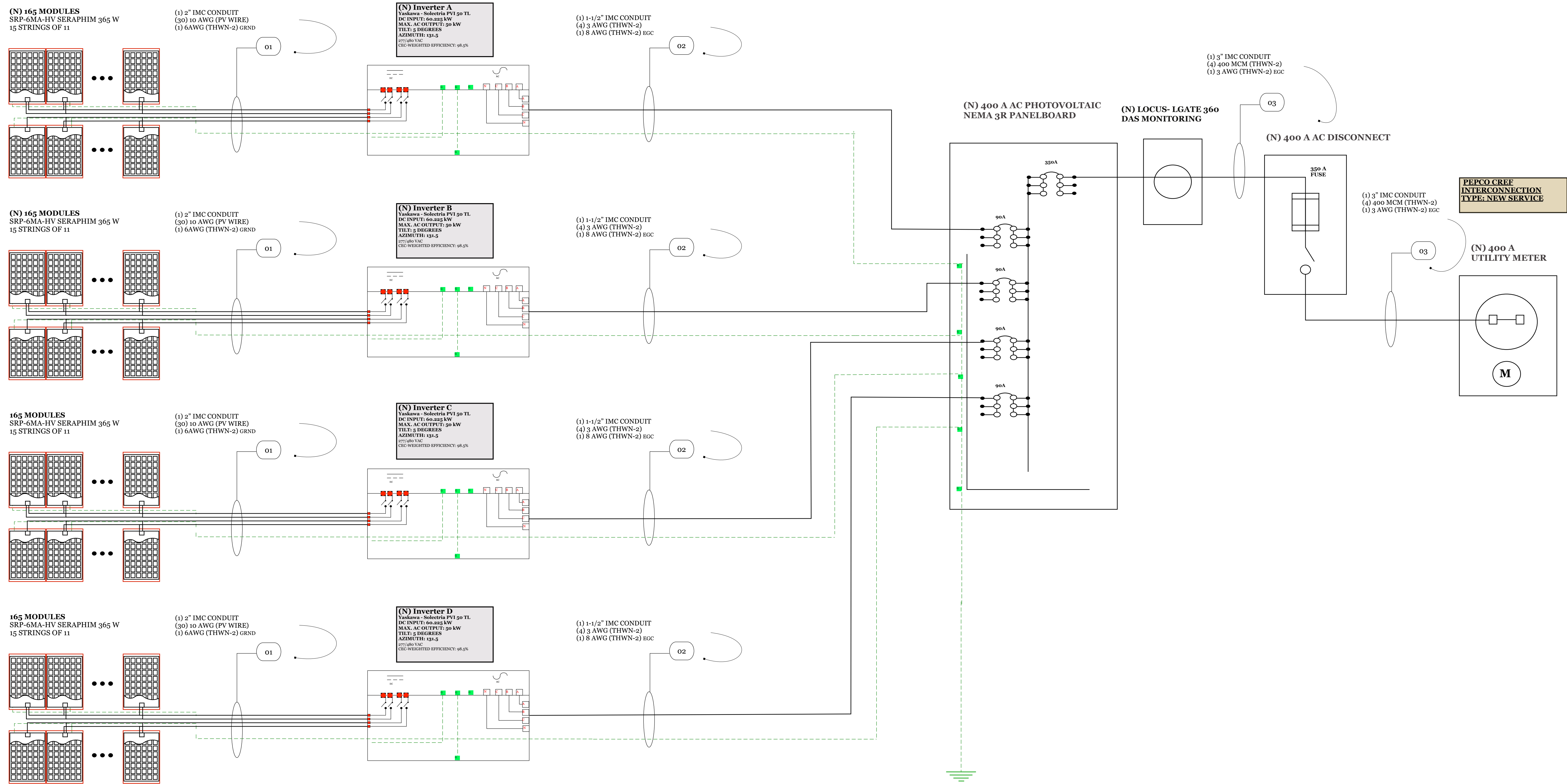
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SHEET SCHEDULE	
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R-03	RESOURCE DOCUMENTS 3 (PLAT)


DRAWING NAME
**CANOPY
ELEVATION
DRAWINGS 2**

SHEET #
A-03

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CONDUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL	LENGTH	VOLTAGE DROP
1	4	STRING	INVERTER	10 AWG	PV WIRE	COPPER	2" DIA. IMC	15	30	38.14%	15 A	8 AWG	BARE, COPPER	0.71	(56°C)	1	9.8A	15.1A	55A	39.1A	90°C	55 A	100FT	0.33%
2	4	INVERTER	PANEL	2 AWG	THWN-2	COPPER	1.25" DIA. IMC	3	3	27.20%	90 A	8 AWG	THWN-2, COPPER	0.96	(34°C)	1	66.2A	82.8A	130A	124.8A	75°C	115 A	100FT	2.27%
3	1	PANEL	TRANSFORMER	400 MCM	THWN-2	COPPER	3" DIA. IMC	1	6	28.04%	350.0A	6 AWG	THWN-2, COPPER	0.96	(34°C)	1	264.8A	331.0A	380A	364.8A	75°C	335 A	50FT	0.06%



REVISIONS				
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APN:

DRAWN BY: P. MAYLONE

CHECKED BY: P. RYAN

SCALE:

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R-03	RESOURCE DOCUMENTS 3 (PLAT)

DRAWING NAME

SINGLE LINE DIAGRAM

SHEET #

E-601

A B C D E F G H I J K L

PVI 50TL & PVI 60TL

3-Ph Transformerless Commercial String Inverters

Features

- Integrated arc fault protection
- Compliant with UL 1741SA
- 3 MPPTs with 5 inputs each
- Integrated DC and AC disconnects
- AC terminals compatible with copper and aluminum conductors
- Modbus communications
- Internal data logger
- 0 - 90° installation orientation
- Remote firmware upgrades
- Remote diagnostics
- Compatible with certain MLPE for module-level rapid shutdown*

Options

- H4 wiring box
- Shade cover
- DC fuse bypass
- Web-based monitoring



Yaskawa Solectria Solar's PVI 50TL and PVI 60TL are grid-tied, transformerless three-phase inverters designed for ground mount, rooftop and carport arrays and can be installed from 0 - 90 degrees. The PVI 50/60TL inverters are the most reliable, efficient and cost effective in their class. They come standard with AC and DC disconnects, three MPPTs, a 15-position string combiner, remote diagnostics, remote firmware upgrades and various protection features. Options include H4 wiring box, shade cover, DC combiner fuse bypass, and web-based monitoring.

YASKAWA

PVI 50TL & PVI 60TL

Specifications

		PVI 50TL	PVI 60TL
DC Input			
Absolute Maximum Input Voltage	1000 VDC		1000 VDC
Maximum Power Input Voltage Range (MPPT)	480-850 VDC		540-850 VDC
Operating Voltage Range (MPPT)	200-950 VDC		200-950 VDC
Maximum Operating Input Current	108 A (36 A per MPPT)		114 A (38 A per MPPT)
Number of MPP Trackers	3		3
Maximum Available PV Current (Isc x 1.25)	204 A (68 A per MPPT)		204 A (68 A per MPPT)
Maximum PV Power	75 kW (30 kW per MPPT)		90 kW (33 kW per MPPT)
Start Voltage	330 V		330 V
AC Output			
Nominal Output Voltage	480 VAC, 3-Ph/PE/N		480 VAC, 3-Ph/PE/N
AC Voltage Range (Standard)	-12/+10%		-12/+10%
PF=1.00 - Real/Apparent Power/Output Current	50 kW / 50 kVA / 60.2 A		60 kW / 60 kVA / 72.3 A
PF=+/-0.91 - Real/Apparent Power/Output Current	50 kW / 55 kVA / 66.2 A		60 kW / 66 kVA / 79.4 A
Nominal Output Frequency	60 Hz		60 Hz
Output Frequency Range	57-63 Hz		57-63 Hz
Power Factor	Unity, >0.99 (Adjustable 0.8 leading to 0.8 lagging)		Unity, >0.99 (Adjustable 0.8 leading to 0.8 lagging)
Fault Current Contribution (1 Cycle RMS)	55 A		55 A
Total Harmonic Distortion (THD) @ Rated Load	<3%		<3%
Recommended OCPD Device	90 A		100 A
AC Surge Protection	Type II MOV, 1240Vc, 15kA 1tm (8/20µ)		
Efficiency			
Peak Efficiency	99.0%		99.0%
CEC Efficiency	98.5%		98.5%
Tare Loss	< 2 W		< 2 W
Integrated String Combiner			
Fused Inputs	15 Fused Positions (5 Positions per MPPT) 15 A Standard (20, 25, 30 A accepted)**		
Temperature			
Ambient Temperature Range	-22°F to +140°F (-30°C to +60°C); Derating occurs over +122°F (+50°C)		
Storage Temperature Range	No low temp minimum to +158°F (+70°C)		
Relative Humidity (non-condensing)	0-95%		
Operating Altitude	13,123 ft (4,000 m) Derating occurs from 9,842.5 ft (3,000 m)		
Communications			
Data Logger Hardware	Standard, Internal		
SolrenView Web-Based Monitoring Service	Optional		
Revenue Grade Metering	Optional, External		
Communication Interface	RS-485 Modbus RTU		
Remote Firmware Upgrades	Standard		
Remote Diagnostics	Standard		
Features & Protections			
Arc-Fault	Standard		
Smart Grid Features	L/HVRT, L/HFRT, Volt-Var, Frequency-Watt and Volt-Watt, Soft-Start, Soft-Step		
Testing & Certifications			
Safety Listings & Certifications	UL 1741SA-2016, UL1699B, CSA-C22.2 #107.1, IEEE1547a-2014		
Advanced Grid Support Functionality	Rule 21, UL 1741SA		
Testing Agency	ETL		
FCC Compliance	FCC Part 15		
Warranty			
Standard Limited Warranty	10 Years		
Enclosure			
Acoustic Noise Rating	< 60 dBA @ 1 m at room temperature		
AC/DC Disconnect	Standard, fully-integrated		
Mounting Angle***	0-90° from horizontal (vertical, angled, flat)		
Dimensions (H x W x D)	39.4 in. x 23.6 in. x 10.2 in (1,000 mm x 600 mm x 260 mm)		
Weight	Inverter: 123.5 lbs (56 kg); Wiring Box: 33 lbs (15 kg)		
Enclosure Rating and Finish	Type 4X; Polyester Powder Coated Aluminum		

*Please inquire about compatible Module-Level Power Electronics (MLPE)

**Yaskawa Solectria Solar does not supply optional fuses sizes

***Shade cover accessory required for installation of 75° or less

SOLECTRIA SOLAR

SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
inverters@solectria.com

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YASKAWA



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NEW PV SYSTEM

DRAWN BY
PLM

ISSUE
3/01/2019

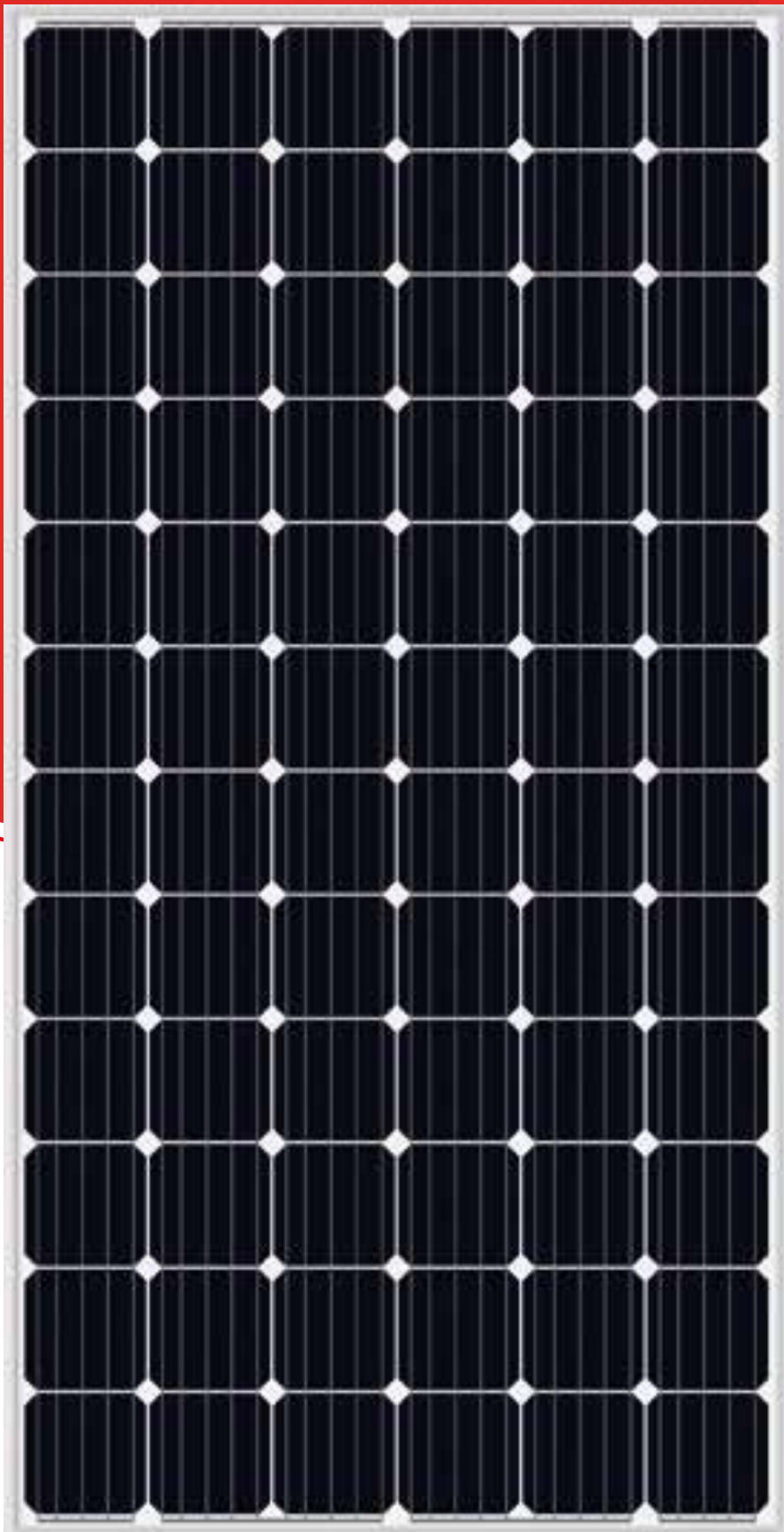
DESCRIPTION
Sheet Description

RESOURCE
DOCUMENTS

R_{0.1}

SRP-6MA-HV SERIES 6 INCH 72 CELLS

350-365w



KEY FEATURES

- Bankable products
- Class C fire safety class
- Top rank in Photon yield measurement
- Outstanding power output capability at low irradiance
- Tested and certified according to newest IEC standard IEC61215:2016
- Triple 100% Electroluminescence (EL) tests minimize breakage rate
- Tested and certified according to newest IEC standard IEC61730-1:2016 IEC61730-2:2016
- World 1st company to pass "Thresher Test" and "On-site Power Measure ment Validation" certificate
- Withstand and applicable up to 1500V high system voltage

MANAGEMENT SYSTEM

ISO 9001: Quality management system
ISO 14001: Standard for environmental management system
OHSAS 18001: International standard for occupational health and safety assessment system

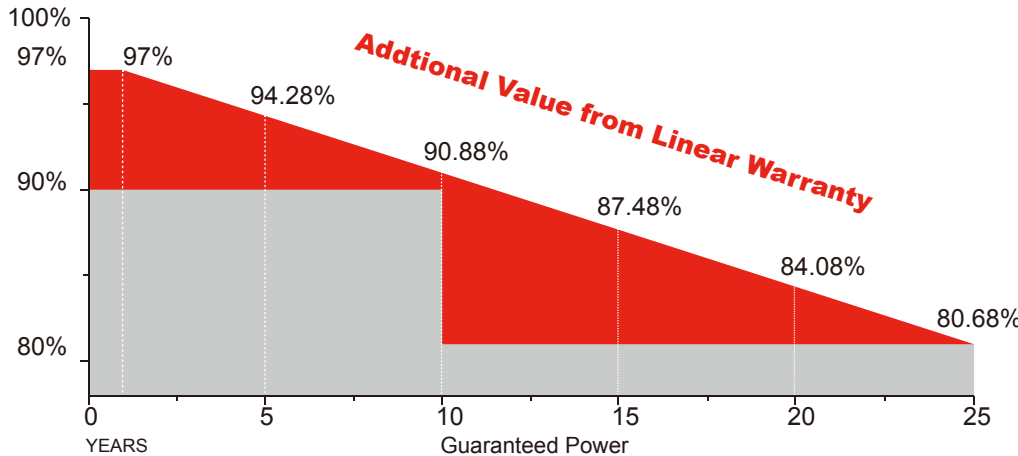
INSURANCE



PRODUCT CERTIFICATES



WARRANTY



10 YEARS Guarantee on product material and workmanship
25 YEARS linear power output warranty

Specifications are subject to change without further notification SRP-DS-EN-2018V2.0 © Copyright 2018 Seraphim

SERAPHIM SOLAR SYSTEM CO., LTD.

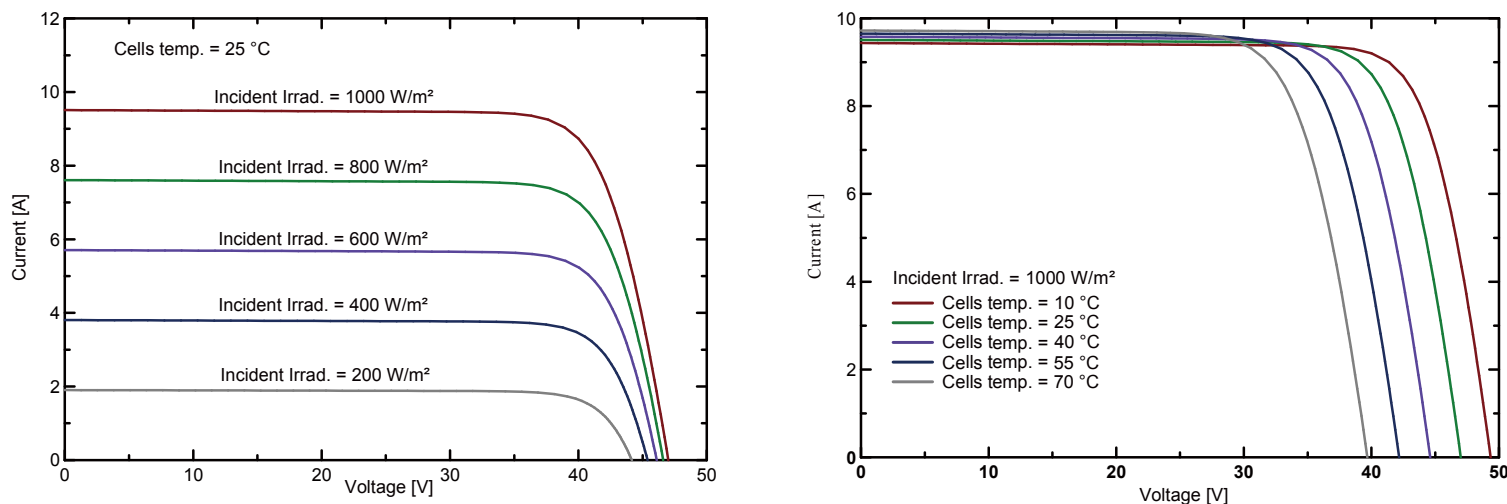
www.seraphim-energy.com info@seraphim-energy.com

Electrical Characteristics

Module Type	SRP-350-6MA-HV		SRP-355-6MA-HV		SRP-360-6MA-HV		SRP-365-6MA-HV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power -P _{mp} (W)	350	260	355	263	360	267	365	271
Open Circuit Voltage -V _{oc} (V)	47	43.4	47.2	43.6	47.4	43.8	47.6	44.0
Short Circuit Current -I _{sc} (A)	9.51	7.68	9.61	7.75	9.70	7.84	9.78	7.90
Maximum Power Voltage -V _{mp} (V)	38.1	35.8	38.3	35.9	38.5	36.1	38.7	36.3
Maximum Power Current -I _{mp} (A)	9.19	7.27	9.27	7.33	9.36	7.40	9.44	7.47
Module Efficiency STC-η _m (%)	17.91		18.17		18.42		18.68	
Power Tolerance (W)	(0,+4.99)							
Maximum System Voltage (V)	1500 (TÜV)							
Maximum Series Fuse Rating (A)	20							
Pmax Temperature Coefficient	-0.40%/°C							
Voc Temperature Coefficient	-0.32 %/°C							
Isc Temperature Coefficient	+0.05 %/°C							
Operating Temperature	-40~+85 °C							
Nominal Operating Cell Temperature	45±2 °C							

STC: Irradiance 1000 W/m² module temperature 25°C AM=1.5
NOCT: Irradiance 800 W/m² ambient temperature 20°C wind speed :1m/s Power measurement tolerance: +/-3%

Curve



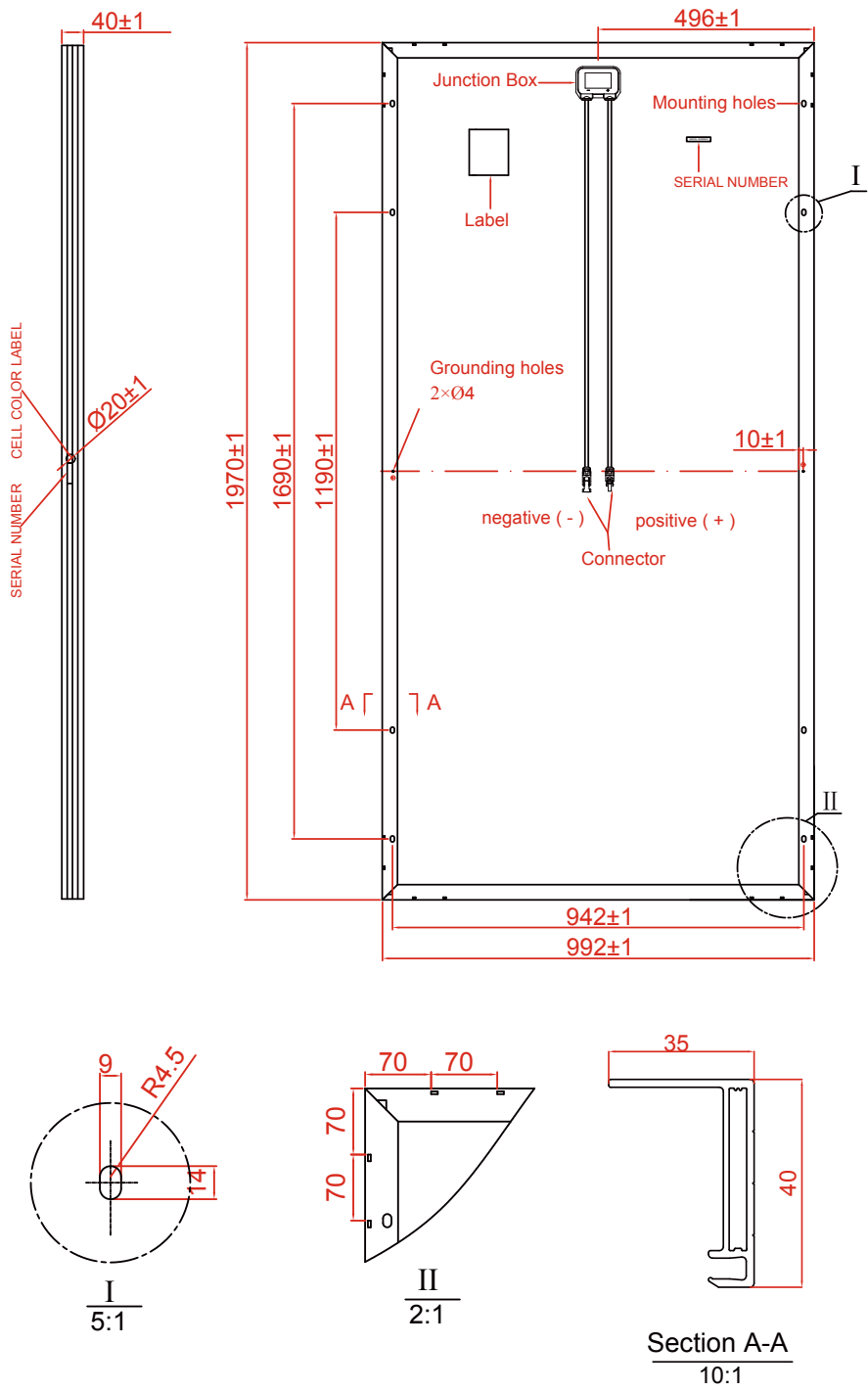
Mechanical Specifications

External Dimension	1970 x 992 x 40mm
Weight	21.5kg
Solar Cells	Mono crystalline 156.75 x 156.75 mm (72pcs)
Glass of Both Side	3.2 mm tempered glass, low iron
Frame	Anodized aluminium alloy
Junction Box	IP67
Output Cables	4.0 mm²,cable length:1100 mm
Connector	MC4 Compatible
Mechanical Load	5400 Pa

Packing Configuration

External Dimension	1970 x 992 x 40mm	
Container	20'GP	40'GP
Pieces per Pallet	27	27
Pallets per Container	10	22
Pieces per Container	270	594

Technical drawing



* All Dimensions in mm
* The above drawing is a graphical representation of the product.
For engineering quality drawings please contact SERAPHIM.

Specifications are subject to change without further notification SRP-DS-EN-2018V2.0 © Copyright 2018 Seraphim

SERAPHIM SOLAR SYSTEM CO., LTD.

www.seraphim-energy.com info@seraphim-energy.com



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PLM

ISSUE
3/01/2019

DESCRIPTION
Sheet Description

RESOURCE
DOCUMENTS

R_{0.2}

Washington, D.C., December 26, 2018

Plat for Building Permit of: SQUARE 4098 LOTS 246 - 247

Scale: 1 inch = 40 feet

Recorded in Book 146 Page 121 (Lot 246)
Book 146 Page 121 (Lot 247)

Receipt No. 19-01805 Drawn by: A.S.

Furnished to: NICHOLAS BIHUN

"I hereby certify that the dimensions and configuration of the lot(s) hereon depicted are consistent with the records of the Office of the Surveyor unless otherwise noted, but may not reflect actual field measurements. The dimensions and configuration of A&T lots are provided by the Office of Tax and Revenue and may not necessarily agree with the deed description(s)."

I hereby certify that on this plat on which the Office of the Surveyor has drawn the dimensions of this lot, I have accurately and completely depicted and labeled the following:

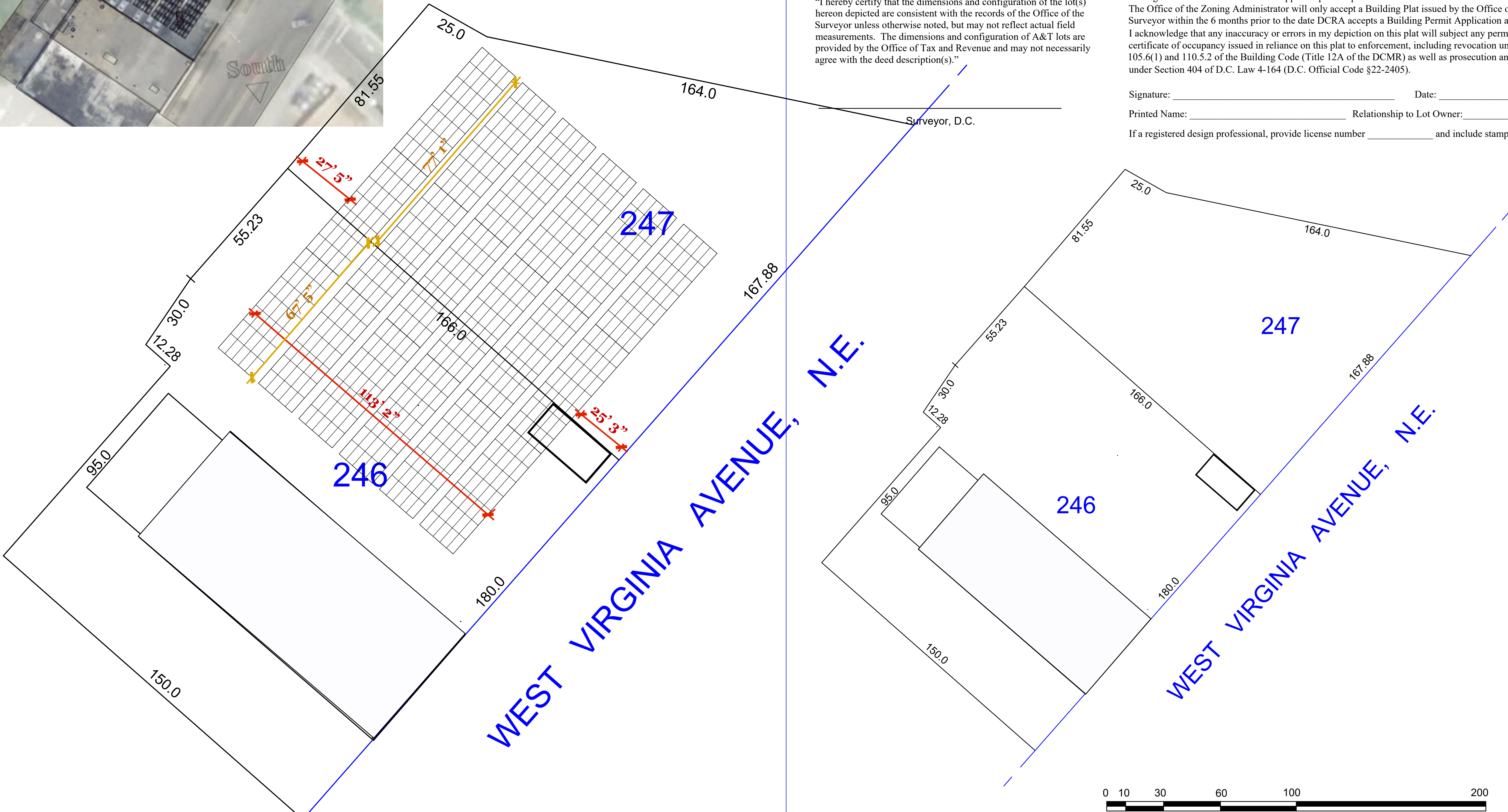
- 1) all existing buildings and improvements - including parking spaces, covered porches, decks and retaining walls over four feet above grade, and any existing face-on-line or party wall labeled as such, well as projections and improvements in public space - with complete and accurate dimensions;
- 2) all proposed demolition or raze of existing buildings duly labeled as such; all proposed buildings and improvements - including parking spaces, covered porches, decks and retaining walls over four feet above grade, any existing face-on-line or party wall labeled as such, as well as projections and improvements in public space and the improvements used to satisfy previous surface or green area ratio requirements - with complete and accurate dimensions, in conformity with the plans submitted with building permit application _____; and
- 3) any existing chimney or vent on an adjacent property that is located within 10 feet of this lot.
- I also hereby certify that:
- 1) my depiction on this plat, as detailed above, is accurate and complete as of the date of my signature hereon;
- 2) there is no elevation change exceeding ten feet measured between lot lines; or if so, this elevation change is depicted on a site plan submitted with the plans for this permit application;
- 3) I have/~~have not~~ (circle one) filed a subdivision application with the Office of the Surveyor;
- 4) I have/~~have not~~ (circle one) filed a subdivision application with the Office of Tax & Revenue; and
- 5) if there are changes to the lot and its boundaries as shown on this plat, or to the proposed construction and plans as shown on this plat, that I shall obtain an updated plat from the Office of the Surveyor on which I will depict all existing and proposed construction and which I will then submit to the Office of the Zoning Administrator for review and approval prior to permit issuance.
- The Office of the Zoning Administrator will only accept a Building Plat issued by the Office of the Surveyor within the 6 months prior to the date DCRA accepts a Building Permit Application as complete. I acknowledge that any inaccuracy or errors in my depiction on this plat will subject any permit or certificate of occupancy issued in reliance on this plat to enforcement, including revocation under Sections 105.6(1) and 110.5.2 of the Building Code (Title 12A of the DCMR) as well as prosecution and penalties under Section 404 of D.C. Law 4-164 (D.C. Official Code §22-2405).

Signature: _____ Date: _____

Printed Name: _____ Relationship to Lot Owner: _____

If a registered design professional, provide license number _____ and include stamp below.

~~Surveyor, D.C.~~



SR-19-01805(2018)
* E-MAIL



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ISSUE
3/01/2019

DESCRIPTION

Sheet Description

RESOURCE DOCUMENTS (PLAT)

R_{0.3}